IAEA-Marine Environment Laboratories (IAEA-MEL)
RADIOMETRICS LABORATORY (RML)

"…to contribute to sustainable development in Member States through the use of nuclear techniques to better understand and protect the marine environment and climate"

International Atomic Energy Agency
Dept. of Nuclear Sciences and Applications

Marine Environment Laboratories
Monaco

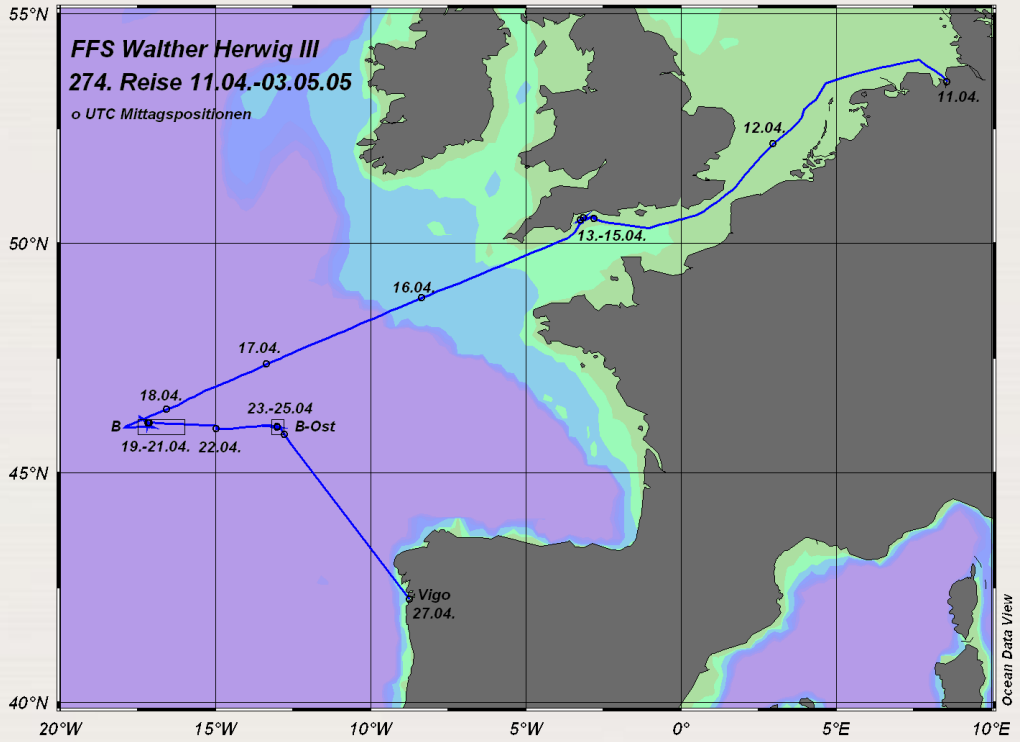
Main objectives

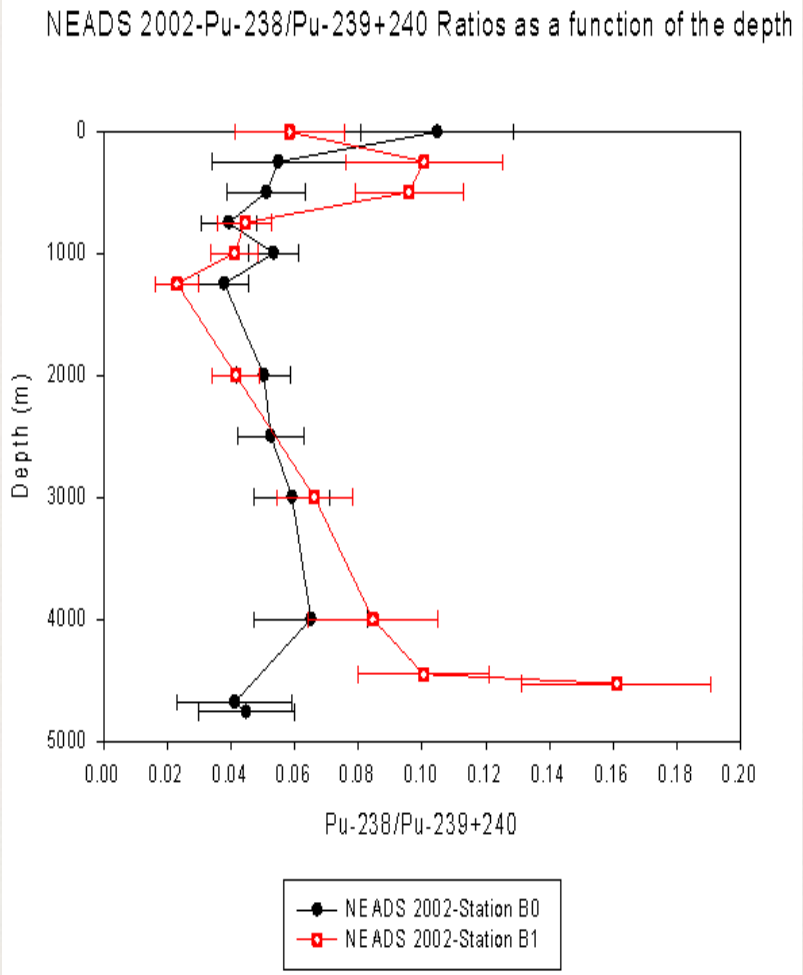
- To promote the use of nuclear and isotopic techniques to better understand oceanic processes and to protect the coastal marine environment and its resources
- To enhance quality assurance for global and national marine monitoring programmes
- To transfer technologies to MS for marine monitoring and assessment through training and capacity building

RML Analytical Facilities

- Several chemical labs (plus special lab for training)
- Underground (11m below surface) Gamma-Spectrometer (7)
- All standard counting techniques (Alpha, Gamma, Beta)
- Graphite line (for radiocarbon sample preparation)
- XRF, Laser grain-size analyser
- Large Volume Air Sampler
- Seagoing equipment (Multicorer, Niskin bottles, in-situ filtration pumps)

North-East Atlantic dumping site

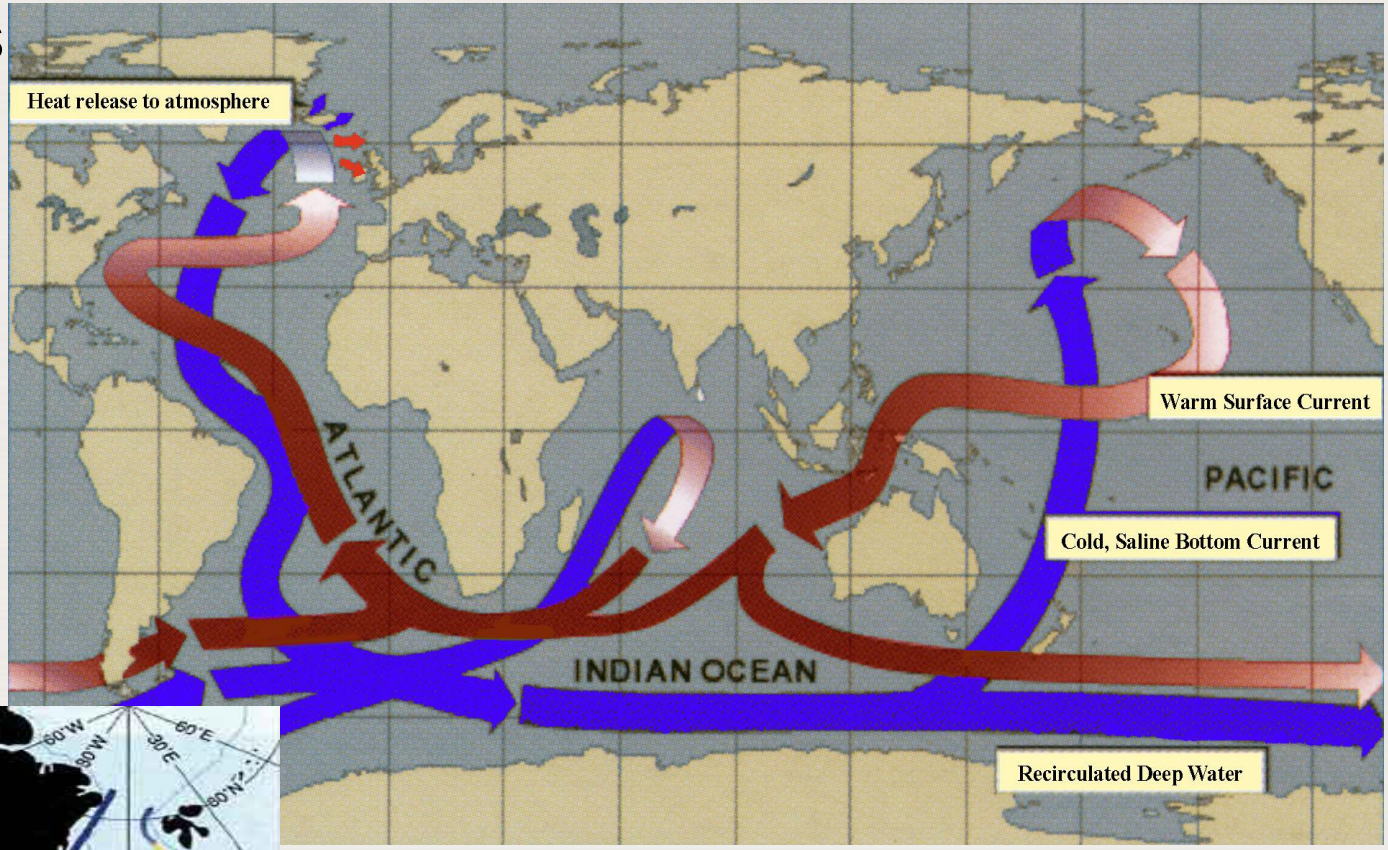


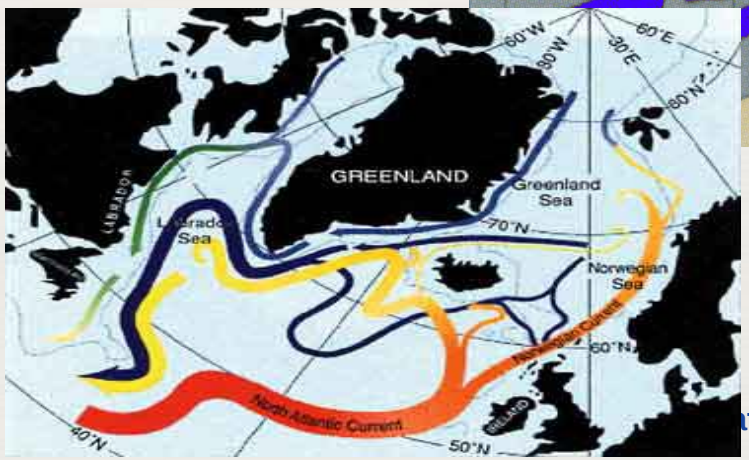


The conveyor belt

Use of isotopes to study global circulation

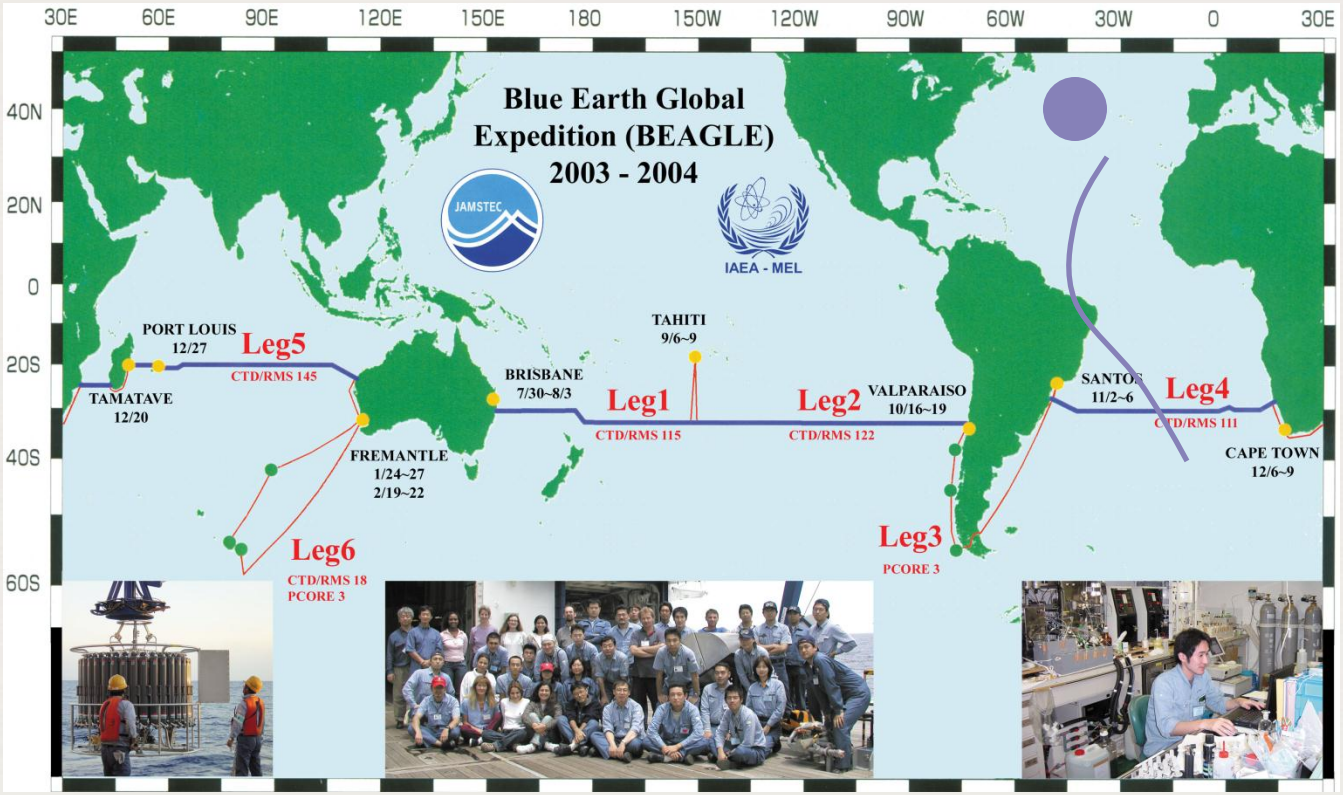
^{3}H, ^{3}He, ^{14}C
^{90}Sr, ^{99}Tc, ^{129}I
^{137}Cs



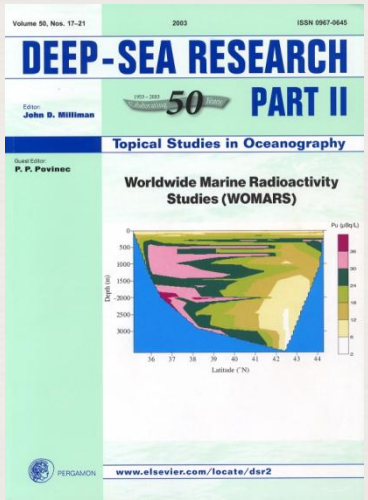


Nuclear techniques for better understanding the oceans

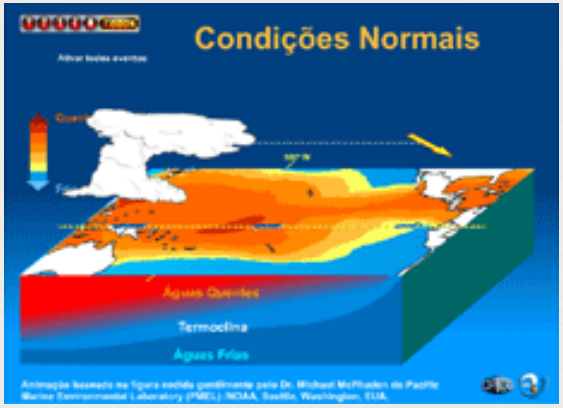
Worldwide radiotracers help to understand global marine processes

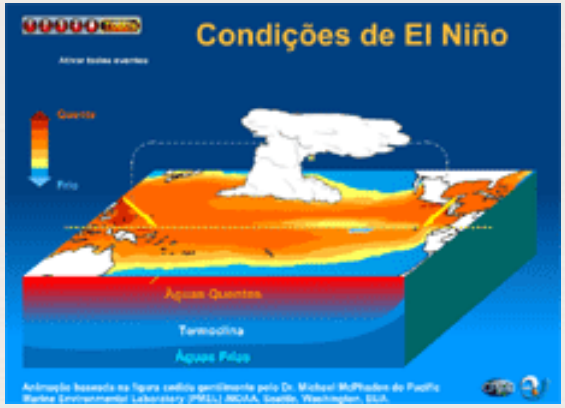


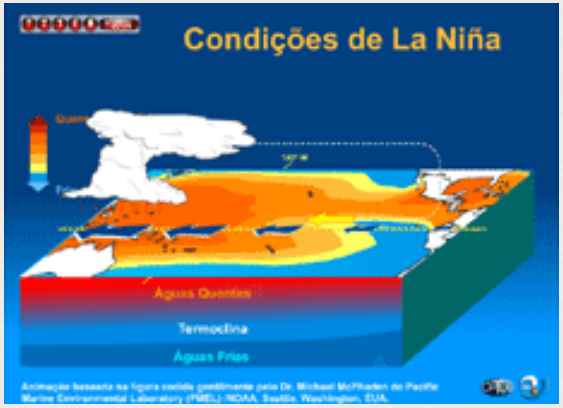
Cruises:
SHOTS
NEADS'2005
GEOTRACES'2005



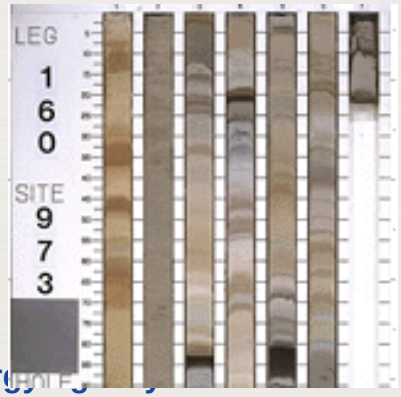
Nuclear techniques to study climate change

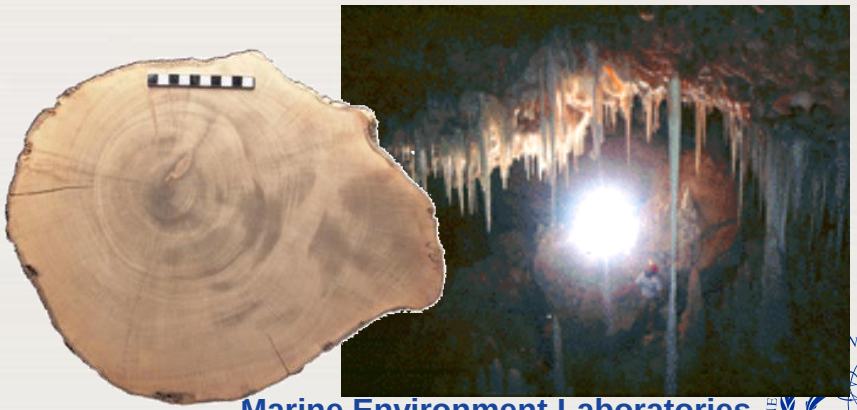






CRP: Nuclear and isotopic studies of the El Niño phenomenon in the ocean
Australia, France, Indonesia, Israel, Jordan, Monaco, New Zealand, Peru, USA





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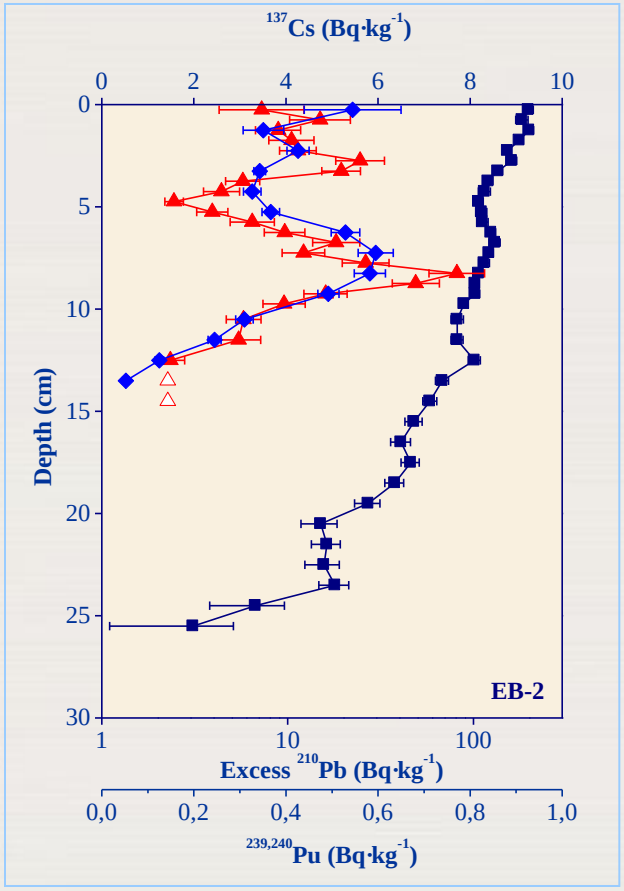
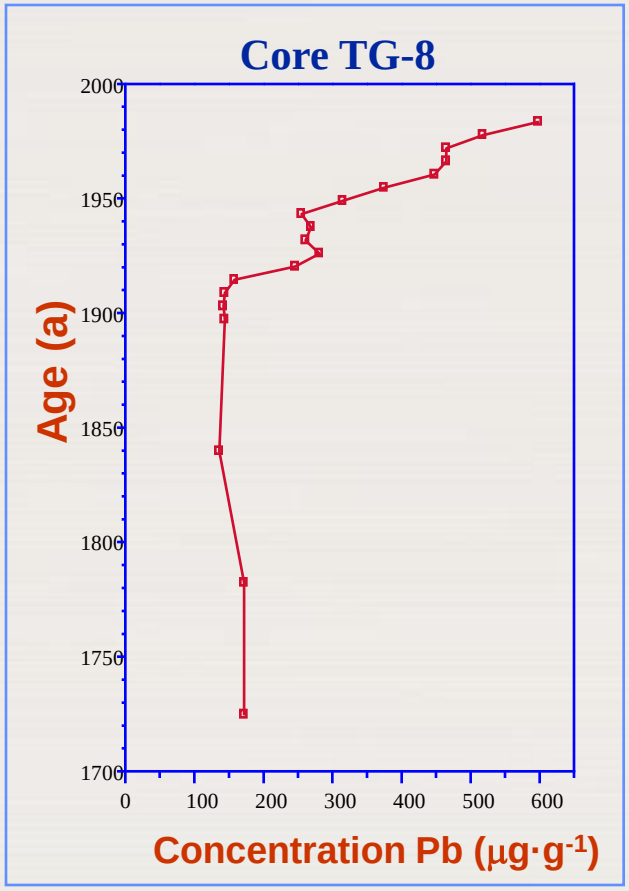
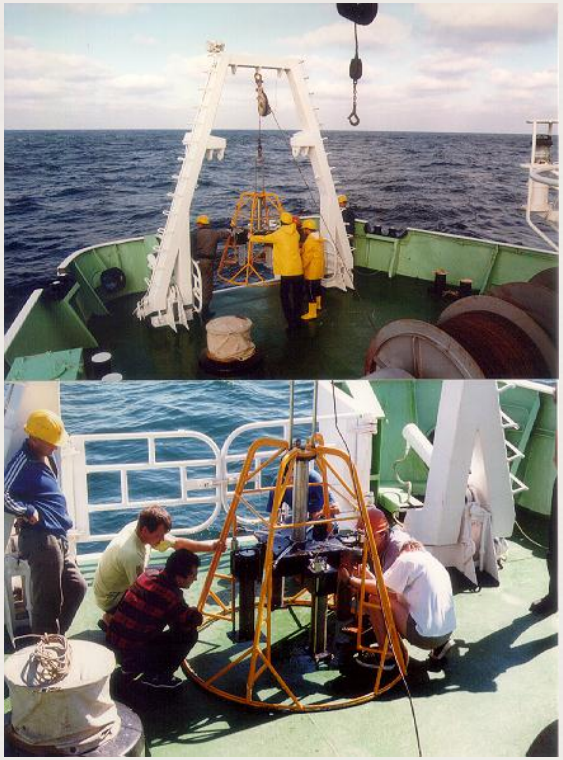
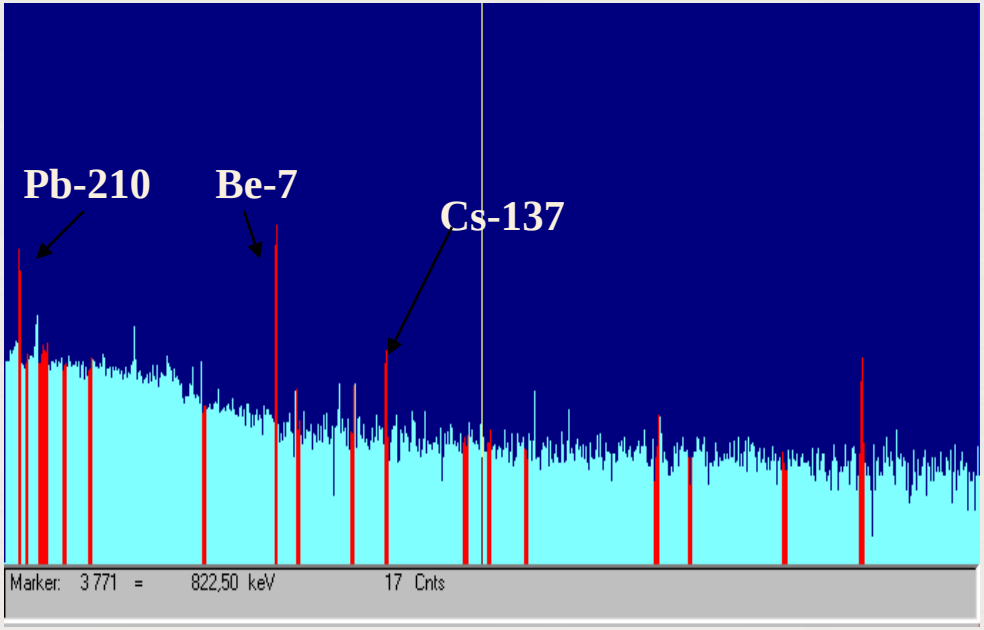
Reconstruction of the history of pollution

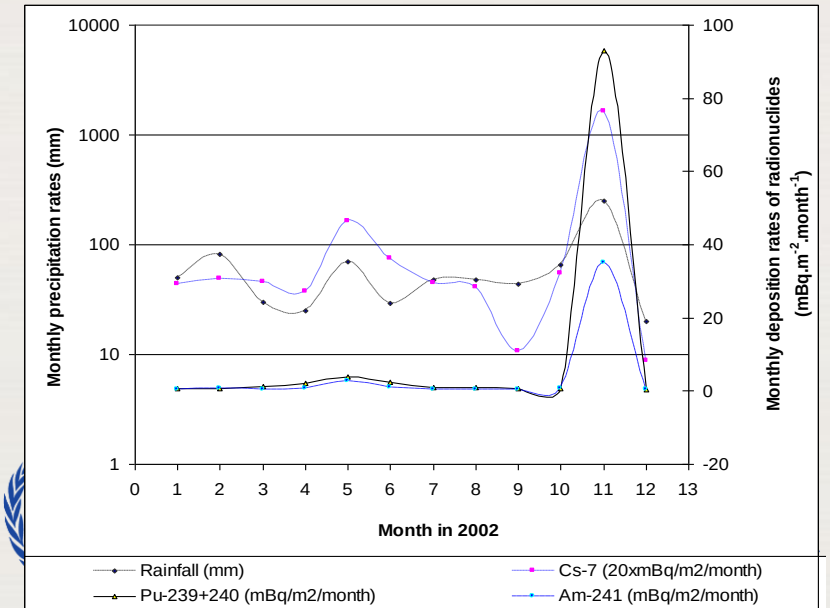






Monitoring air deposition in Monaco





Impact of Saharan dust events in the Mediterranean Sea

PHAM, M.K. et al.
Deposition of Saharan Dust in Monaco Rain 2001-2002: Radionuclides and Elemental Composition
Physica Scripta 71 (2005) 1-4.

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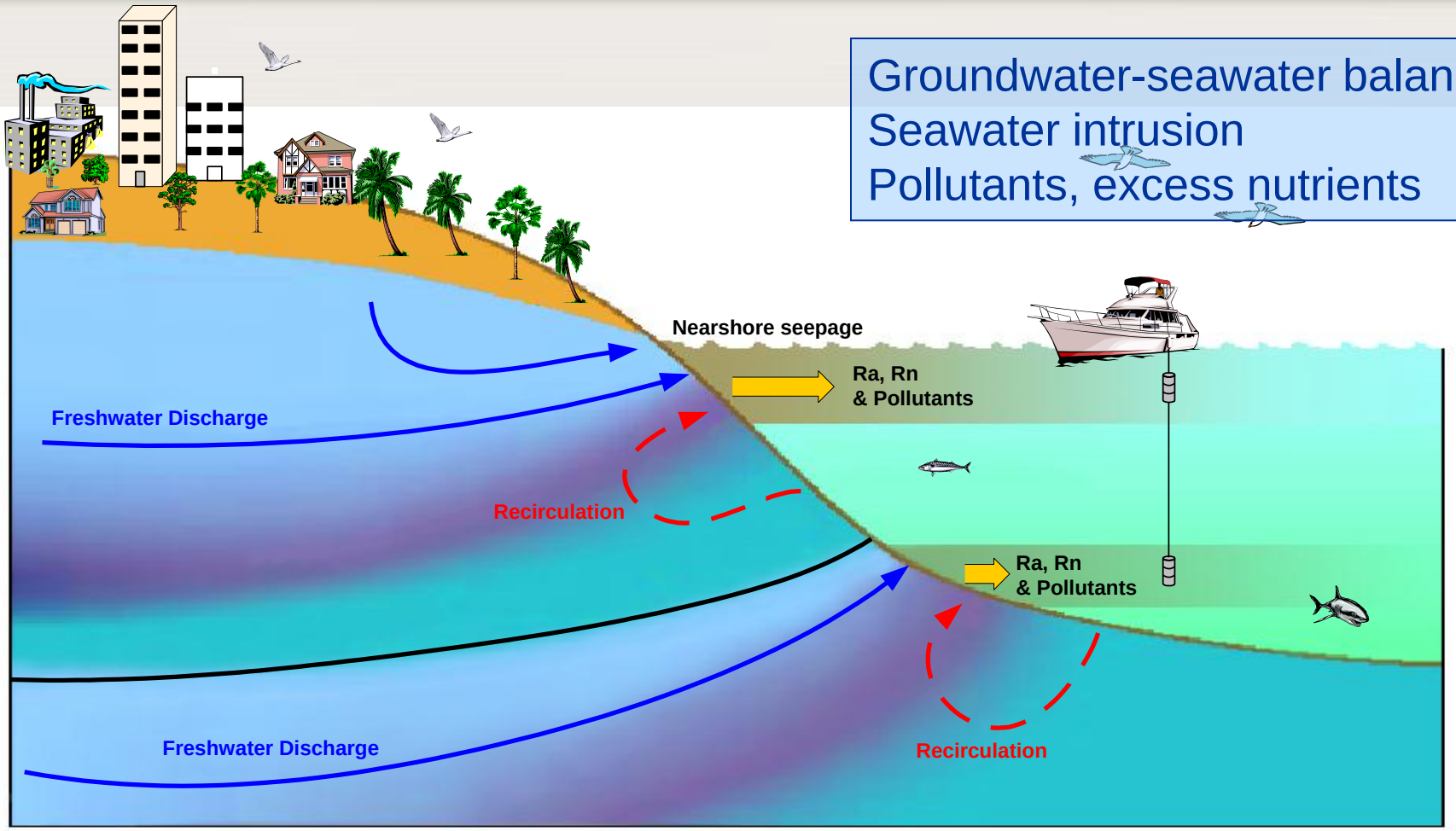
Submarine groundwater discharge



^{222}Rn, radium isotopes

Fukushima NPP accident

International Atomic Energy Agency
Dept. of Nuclear Sciences and Applications

11 March

Earthquake + Tsunami

… resulting in flooding of buildings and in that the cooling system in unit 1-4 stopped

16-17 March

Atmospheric release

…due to explosions in the reactor buildings, causing contamination on land and on the sea. The release could be traced at very low level in Monaco between 26 March to 21 April

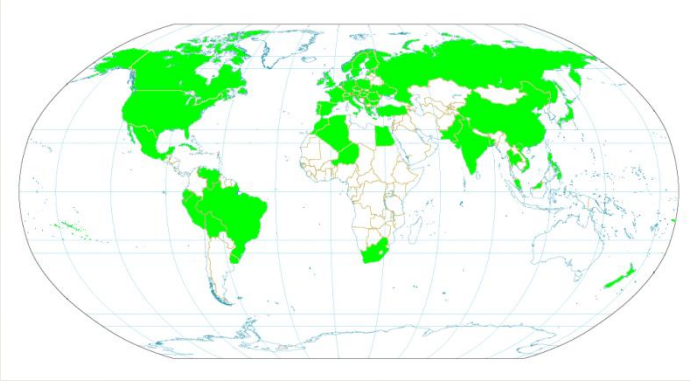
2-6 April

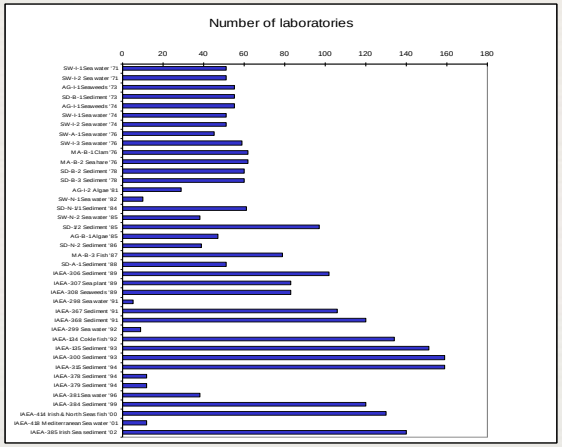
High level Liquid releases into the sea

…due to a leak from unit 2. High level contaminated entered the marine environment.

Marine Environment Laboratories
Monaco

Improve quality management in laboratories





MS Laboratories need to establish proper quality assurance/quality control procedures and validate them regularly (intercomparison exercises, proficiency tests, reference materials)

Technical Support for (IAEA)

Technical Cooperation (TC) Projects

What is Technical Cooperation?

The Technical Cooperation Department of the International Atomic Energy Agency helps to transfer nuclear and related technologies for peaceful uses to countries throughout the world.

The TC Programme disburses more than $70 million (US dollars) worth of equipment, services, and training per year in approximately 100 countries and territories which are grouped into four geographic regions.

TC Programmes

- National projects (country projects)
- Regional projects (several countries)
- Interregional projects.

Projects may comprise one or more of the following components:

- Supply and commissioning of sampling and radiometric equipment and laboratory supplies
- Training: fellowships (up to 6 month), scientific visits, training courses, experts visits,
- Field expeditions (cruises)
- Meetings/workshops